Project N°:	**FP7-610582**
Project Acronym:	**ENVISAGE**
Project Title:	**Engineering Virtualized Services**
Instrument:	**Collaborative Project**
Scheme:	**Information & Communication Technologies**

Deliverable D5.5.3
Final Report on Community Reach-Out

Date of document: T36

Start date of the project: **1st October 2013** Duration: **36 months**

Organisation name of lead contractor for this deliverable: **ATB**

Final version

STREP Project supported by the 7th Framework Programme of the EC		
Dissemination level		
PU	Public	✓
PP	Restricted to other programme participants (including Commission Services)	
RE	Restricted to a group specified by the consortium (including Commission Services)	
CO	Confidential, only for members of the consortium (including Commission Services)	

Executive Summary:
Final Report on Community Reach-Out

This document summarizes deliverable D5.5.3 of project FP7-610582 (Envisage), a Collaborative Project supported by the 7th Framework Programme of the EC. within the Information & Communication Technologies scheme. Full information on this project is available online at `http://www.envisage-project.eu`.

This report provides a summary of the industry and community dissemination efforts throughout the entire Envisage project.

List of Authors

Vegard Havdal (ATB)
Einar Broch Johnsen (UIO)

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Chapter 1

Introduction

A goal for T5.5 is to create awareness of the results and tools created in Envisage among software developers. The project objectives addressed by this are O5.5 ("enlarge user community and make European industry aware of Envisage capabilities"), and O5.6 ("collect feedback from academia, industrial communities and organizations").

The activities for the task have been 3-fold:

- Presentations and events;
- Release of software as open source; and
- Internet presence, including the project homepage `www.envisage-project.eu`, the Collaboratory website `www.abs-models.org` and social media such as Twitter.

In the following chapters we summarize the outcomes of these activities and assess their impact.

1.1 The Envisage Industry Dissemination Strategy and Its Realization

The dissemination strategy of Envisage laid down in Deliverable D5.1 specified the following industrial reach-out activities:

Industry Follow Group. A two-layered Industrial Follow Group (IFG), which consists of contact persons in industry who follow the progress of the project and who actively engage in providing feedback.

- For layer one of the IFG, an internal process within the consortium will identify these industry representatives. Members of the IFG's layer one will be invited to attend project meetings and thus closely follow and provide feedback on the progress of Envisage.
- Layer two of the IFG will consist of a subscription scheme for interested companies, based on an actively advertised mailing list which is open to subscription and which announces project results, presentations, blog posts and workshops of interest to industry.

Envisage plans to offer on-site presentations to the members of the IFG in both layers.

Traditional Industry Dissemination. The Envisage toolset and its usage in the development of the case studies will be presented at application-oriented workshops and conferences, and at industry fairs. We target the following:

- Presentation of Envisage at the SDL Innovate conference series organized by SDL, which have around 2000 industry participants.

- Envisage will organize Industry Days for reach-out and feedback, targeting end-user communities.
- Short instructional videos and webinars for communicating with developers at collaborative development platforms such as GitHub.
- Development of online interactive tutorials.
- We will publish summaries of research results and examples of the developed techniques and application domains as blog posts (both on the project's forthcoming blog and on the respective blogs of Envisage members).
- We aim at a lowered threshold for trying new open-source software through the Envisage virtual collaboratory and by means of automated deployment scripts, which can be a huge win.

From Strategy to Practice. Given this strategy, the rest of this deliverable reports on how community reach-out happened in practice in the Envisage project.

- Chapter 2 discusses how the IFG was established and followed up;
- Chapter 3 discusses the Industry Days, including the Trondheim Developer's Conference which was targeted in stead of SDL Innovate;
- the Collaboratory website was used as a vehicle for on-line material;
- project results and white papers were disseminated through social media and blogs; and
- the Collaboratory offers a zero-overhead gateway to the open source tools developed in Envisage.

We conclude with a short description of on-going reach-out activities which will continue after the project's funding period has ended in Chapter 7.

Chapter 2

The Industry Follow Group

A two-layered Industrial Follow Group (IFG) was established from the start of the project.

- **Layer 1:** This layer consisted of five software engineers from industry, as reported in the Periodic Progress Reports. The members of the IFM Layer 1 were invited to participate in the plenary project meetings, to foster interaction and give them an in depth overview of the work and progress in the project. Feedback was sought from the participants both during the meetings and in the form of a short report to the coordinator after the meetings, also documented in the Periodic Progress Reports.

- **Layer 2:** This layer consisted of a list of people from companies who have expressed interest in the technologies developed in the project. The members of this group consists in part of developers and in part of managers in companies, looking for opportunities to change how they currently work with cloud deployment. The IFG layer 2 currently consists of 35 people in addition to those in Layer 1. In practice, recruitment to the IFG happened through personal meetings and presentations rather than generically via the web.

Most members of the IFG have so far been followed up on an individual basis, e.g., through company presentations and in a few cases through the identification of a smaller, concrete case study developed by a master or PhD student to enable transfer of knowledge. This allows a transfer of knowledge targeted to the interests and problem domain of a specific company rather than through generic workshops for larger parts of the IFG. In particular, this is the case for our contacts with Deutsche Bahn, ProRail, and UniResearch. We are also actively developing similar initial use cases with Statoil, Schlumberger, IBM, and Evry. We are however in the process of organizing a workshop for companies in Oslo, based on an on-going roadmapping process (see Chapter 7). The plan is that this workshop will be turned into a meet-up group with monthly meetings.

The Envisage consortium has also invested significant effort in documentation work in Year 3, including the documentation available on the collaboratory website and in ease to understand white papers.

Chapter 3

Presentations and Events

This chapter summarizes the events which have been identified as Envisage's Industry Day 1 and Industry Day 2. An additional list of dissemination events for community reach-out is given in Appendix A.

3.1 Industry day 1

As deliverable D5.5.1, the Envisage project organized a presentation at Trondheim Developer Conference 2015 on deductive software verification. The event took place in the Clarion congress center in Trondheim on Monday, October 26, 2015.

A goal for T5.5 is to create awareness of the results and tools created in Envisage among software developers. We identified TimSort as a project result which had received considerable attention and was therefore a candidate for presentation at a broad event and get the interest of software developers. The work is based on the KeY tool, one of the technologies underlying the work in Envisage. The result itself and the attention it has received in software developer communities is documented in deliverable D6.4.

Considerable effort from Envisage team members went into creation awareness for this result, including blog posts, discussion groups, etc. We decided to exploit the attention received by the verification of the TimSort to bring attention to the possibilities and needs for deductive software verification techniques and the impact of this kind tools on mainstream programming.

Trondheim Developer Conference 2015. Trondheim Developer Conference 2015 was the fourth edition of this industry event targeting software developers. TDC offers a meeting place for learning, networking, communication and dialogue across scientific communities and languages. The program is broad, from technical details of backends to local start-ups and technological lighthouses. The event is a joint effort organized by a number of software development interest groups.

Trondheim Developer Conference 2015 featured 40 presentations and 4 workshops. It was a sold-out event with 700 participants. For more information, see the conference website: `http://2015.trondheimdc.no`.

Description of our contribution to TDC. Our contribution to TDC 2015 was a 30 minute technical presentation by Stijn de Gouw (FRH) on deductive software verification using the KeY system, one of the tools utilized in Envisage, and its application to the verification of the TimSort algorithm. The abstract of the presentation is shown in Figure 3.1.

Online video. Stijn's presentation was video recorded and TDC has put it online on Vimeo on the following url:

`https://vimeo.com/146478455`

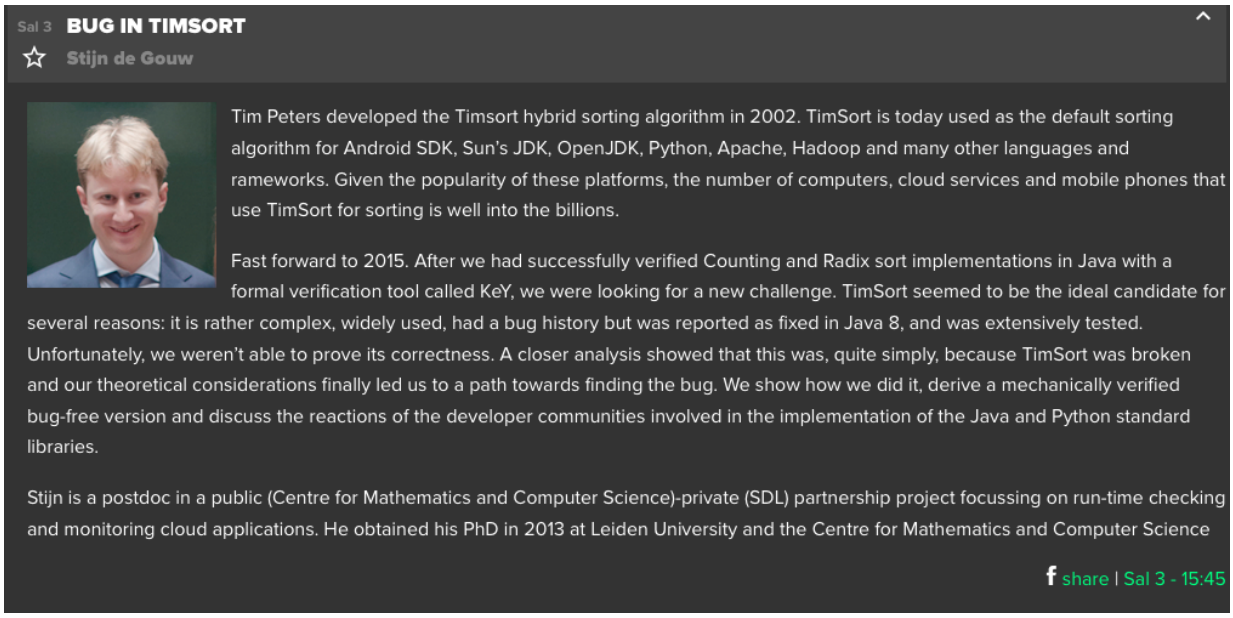
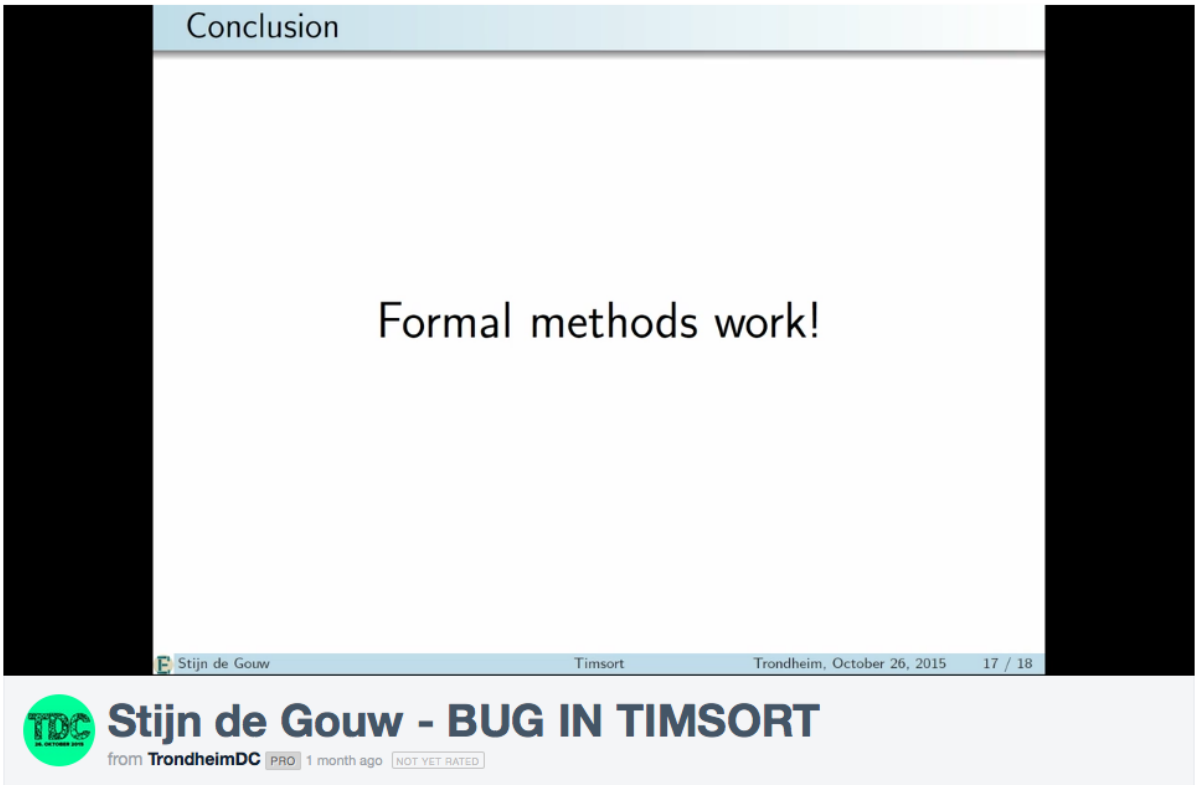


Figure 3.1: The abstract on the TDC 2015 website

Web-page. In addition to the main website of TDC 2015, the Envisage presentation at TDC 2014 is documented on the following web page:

`http://www.envisage-project.eu/trondheim-developer-conference-2015/`.

Feedback. Feedback on the TimSort work itself is already documented elsewhere. Therefore, Stijn ended his presentation with some guidelines for writing verifiable code, based on his experience with software verification using KeY. This triggered some good discussions with the audience.



3.2 Industry day 2

During the plenary meeting in Madrid at the beginning of year 3 of Envisage, discussions took place about different forms of industry and community dissemination events. It was decided to focus efforts on Envisage presentations at conferences and meetups, e.g. events that are already being curated by other parties. The project partners largely agreed that this form of the dissemination work will give the project good exposure but without the administrative overhead of organizing dedicated Envisage events.

In the following paragraphs we provide an overview of these events. More details on each is provided in D5.5.2 of Envisage.

3.2.1 Uni Research, Bergen

- When: February 26, 2016
- Where: Uni Research Center, Bergen
- What: Presentation at company, 3 hours
- Web: https://uni.no/en/uni-computing/

3.2.2 IBM Norway

- When: February 18, 2016
- Where: IBM Norge AS, Rosenholmveien 25, 1414 Kolbotn
- What: Presentation at company, 3 hours
- Web: `https://www.ibm.com/planetwide/no/`

3.2.3 CloudScape 2016

- When: March 8-9, 2016
- Where: Brussels
- What: Demo at conference, 2 x 30min
- Web: `http://www.cloudscapeseries.eu/`

3.2.4 Net Futures 2016

- When: April 20-21, 2016
- Where: Brussels
- What: Demo at conference, 2 x 30min
- Web: `http://netfutures2016.eu/`

Jacopo Mauro (UIO) presenting the ABS technologies at the Oslo Hadoop Big Data Meet-Up.

3.2.5 Sirius kickoff

- When: May 19, 2016
- Where: Oslo
- What: Presentation at kick-off
- Web: `http://sirius-labs.no/`

3.2.6 Oslo Hadoop Big Data Meet-Up

- When: August 18, 2016
- Where: Oslo
- What: 3 presentations at meet-up
- Web: `http://www.meetup.com/Oslo-Hadoop-Big-Data-Meetup/events/231886288/?gj=wc1d.2_e`

Chapter 4

Software Releases

4.1 Open Sourcing of the ABS tools

The ABS tools, including the EasyInterface system used for the Collaboratory, have been released as open source on `https://github.com/abstools`.

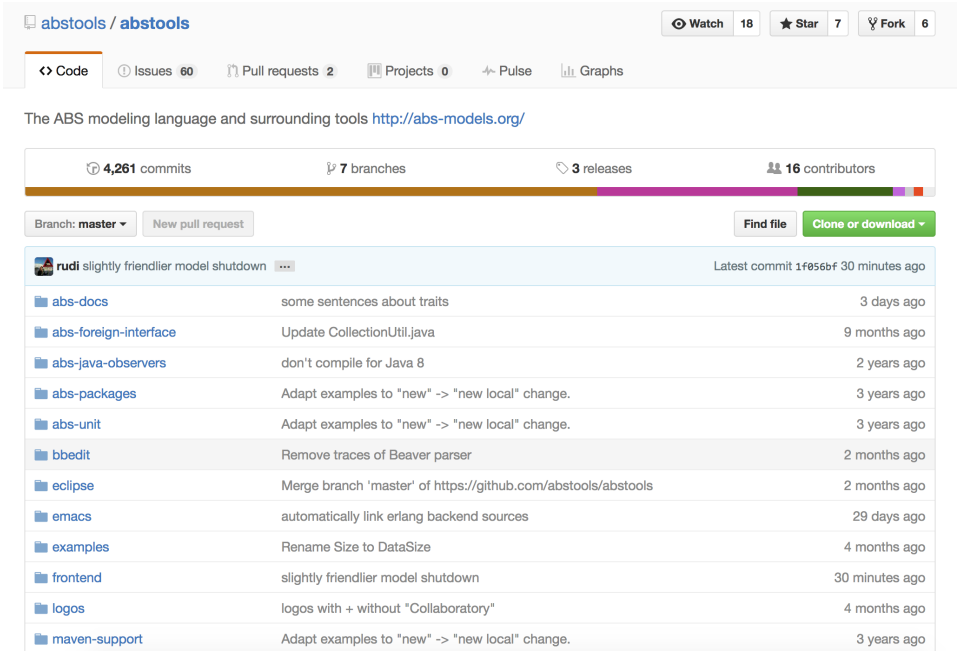


Figure 4.1: ABS tools are open soiurces at `https://github.com/abstools`.

4.2 Open Sourcing of the Deep Learning Kit

In December 2015, ATB open sourced the software library Deep Learning Kit. Details are available here: `http://deeplearningkit.org/2015/12/28/deeplearningkit-open-source-deep-learning-framework-for-apples-ios-os-x-and-tvos/`

Deep Learning Kit is a library for machine learning on iOS devices (iPhone, iPad). It currently allows using deep convolutional neural network models trained in Caffe on Apple's iOS, OS X and tvOS.

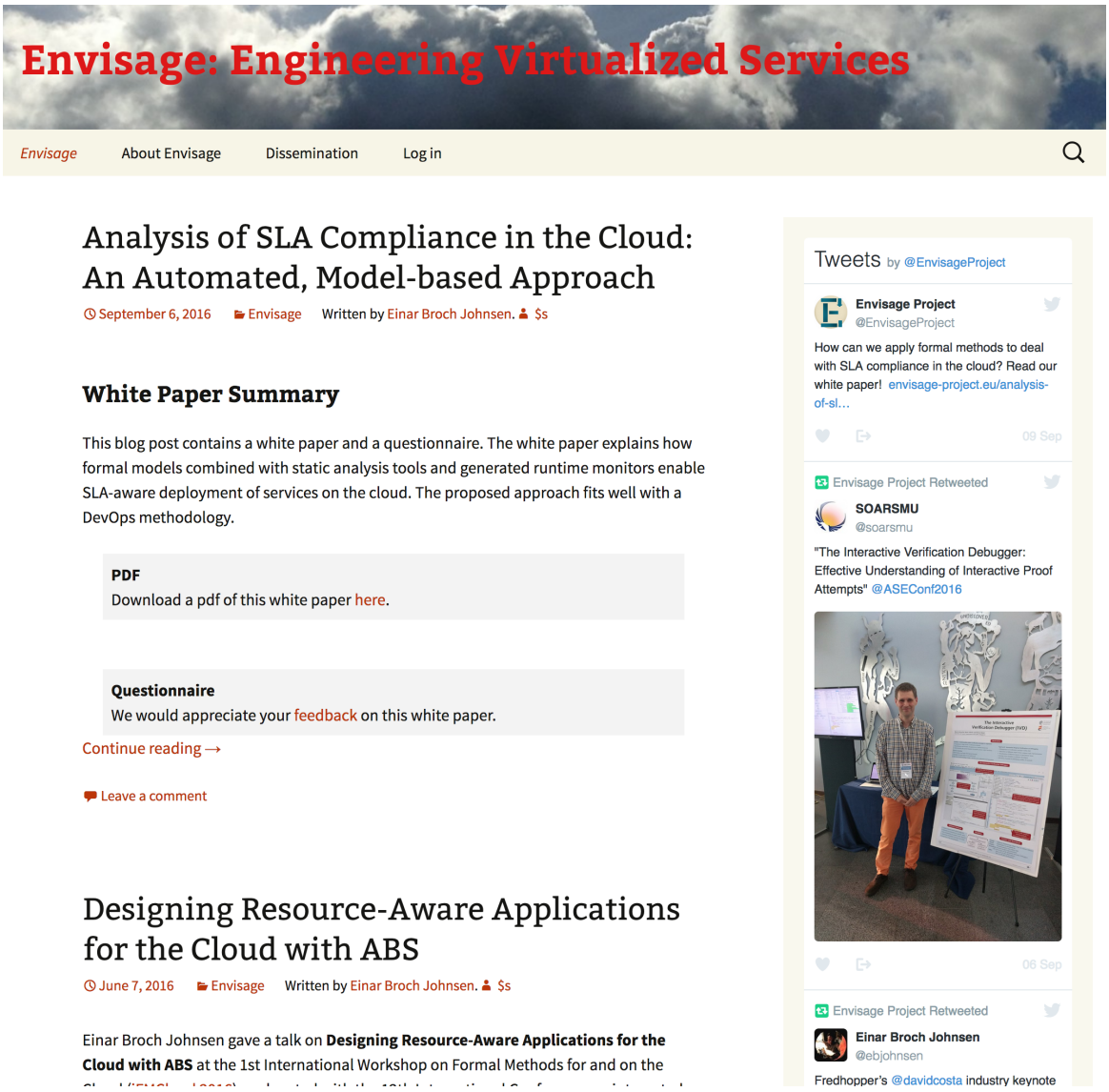
The library is in part attributed to Envisage funding and efforts. It is in a sense a side-product in the same way the TimSort proof was. At the time of writing, Deep Learning Kit has been forked 85 times on GitHub.

Chapter 5

The Envisage Blog

Since early 2015, the Envisage public facing article stream on `www.envisage-project.eu` has consisted of presentation slides, articles, images, and infrastructure notes. There is also a web view of the Envisage Twitter stream.

At the time of writing, the page view count stands at over 70000. Some blog posts, and in particular the original blog post on TimSort, have received a for us amazing number of hits.



Chapter 6

Collaboratory Website and White Papers

The Collaboratory Website. The ABS language and tools are collected in a dedicated, publicly available website: `abs-models.org` (see Fig. 6.1). This site includes ABS as a service based on the Collaboratory. The website also includes *documentation and explanations of the different tools*, as well as a *detailed language manual* as part of the collaboratory website `abs-models.org/documentation/manual`

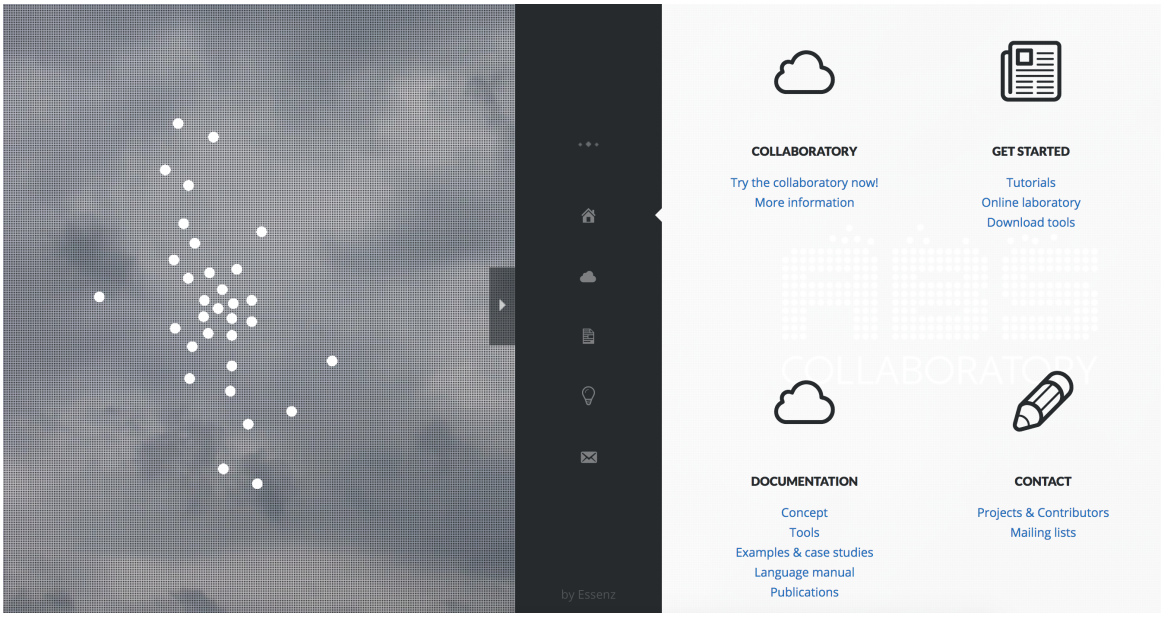


Figure 6.1: The front page of `abs-models.org`.

The White Papers. To introduce the ideas and tools in an example-driven way, this material is complemented by two white papers:

- *Modeling Deployment Decisions for Elastic Services with ABS*
- *Analysis of SLA Compliance in the Cloud: An Automated, Model-based Approach*

Fig 6.2 depicts the white papers.

Figure 6.2: Envisage white papers.

Chapter 7

Ongoing Activities

7.1 Sirius Roadmap and Cloud Workshop

- When: August–October 2016
- Where: Oslo
- What: Identification of use cases from Sirius partners

We are currently in the process of performing a road mapping activity involving all industry partners in the Sirius Center to identify potential take-up activities of the Envisage technologies. The road mapping activities distinguish use case for technologies which are *used* by the companies and technologies which are *developed* by the companies.

This roadmapping process involves all the Sirius partner companies: Statoil, Schlumberger, Computas, Evry, fluid Operations AG, Dolphin Interconnect Solutions, fluid Operations AG, IBM, Kadme, Numascale, Oracle, and OSISoft.

The template questionnaire for the roadmapping activities is displayed in the right.

1. Cloud Use Cases and Challenges

#	Use case	Cloud technology	Current state*	Challenges	5 years dream scenario
1	Create and deploy a distribution solution for processing oil data on the cloud	Hadoop cluster on EC2 Amazon cloud	In Use	Over provisioning of instances -> waste of money	Scale up or down automatically based on the data and traffic
2	Collect information from many equipments on offshore platforms and upload them on the cloud to make it available for maintenance	Use Oracle Cloud or IBM Cloud to store high load data	Under Development	(1) It is really hard to store all the data coming at high frequency. (2) Do on the fly quality assurance of the collected data	Data prediction based on historical data by using tools deployed and availabe on the cloud
3					
4					
5					
6					
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11					
12					
13					
14					
15					

* Options: In Use, Under Development, Planned, Concept

2. Used Cloud Technologies*

#	Technology	Key features	Product link
1	Hadoop	Handles big data, open source, strong community, etc.	http://hadoop.apache.org/
2	Amazon EC2	Resizable computing capacity, support for failure resilient applications, etc.	https://aws.amazon.com/ec2/
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* Third-party Cloud Technologies used within the company or technologies used internally

3. Provided Cloud Technologies*

#	Technology	Key features	Product link
1	Oracle Cloud	Predictable resources, network isolation, ...	https://cloud.oracle.com/en_US/compute
2	IBM Bluemix	...	http://www.ibm.com/cloud-computing/bluemix/
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* Cloud technologies that are offered and developed to the customers or for internal use

7.2 Sirius Cloud Workshop

Sirius Cloud Workshop

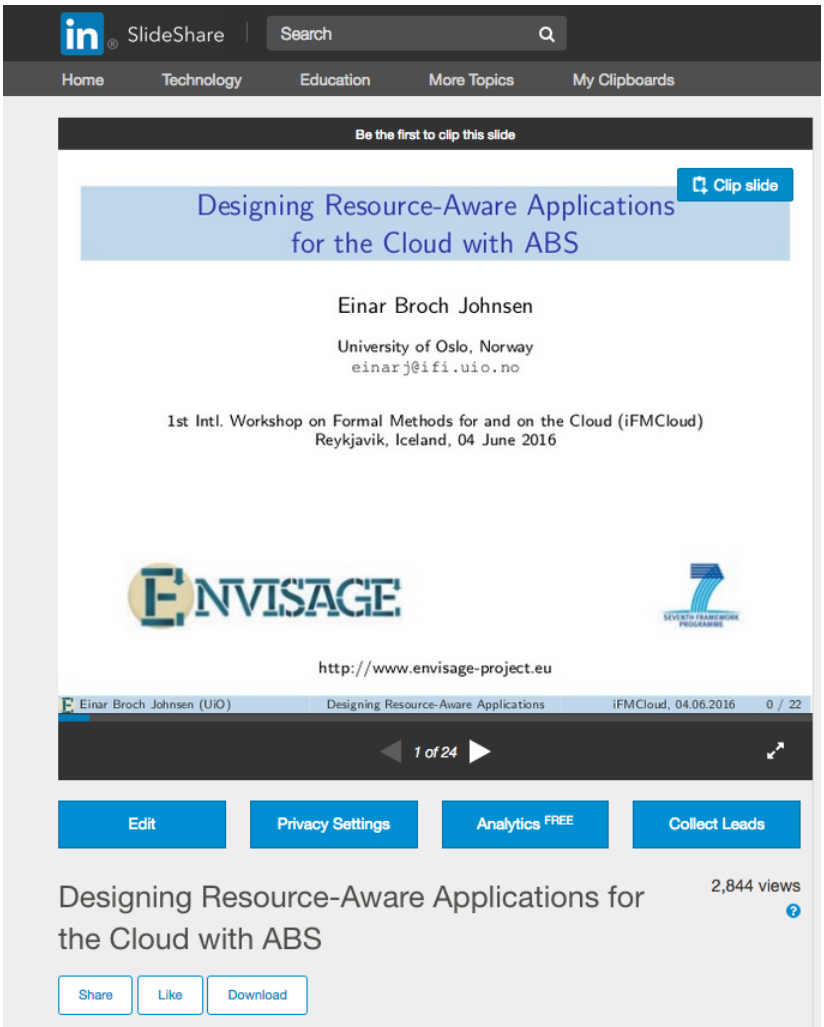
- When: 18 November 2016
- Where: Oslo
- What: One day workshop to identify research collaborations between UIO and Sirius partner companies, based on the outcomes of Envisage and the road map.

The workshop program will consist of a combination of talks highlighting virtualization and cloud challenges identifies by the industry partners, and demo-driven talks showcasing different aspects of Envisage: the modeling concepts and simulation tool, the ABS Smart deployer, the monitoring and visualization of SLA metrics, cost and deadlock analysis, systematic testing, etc.

The opening keynote of the Sirius Cloud Workshop will be given by a representative of Schlumberger, who have already identified several promising use cases for Envisage technologies within their company.

7.3 Slides on Slideshare

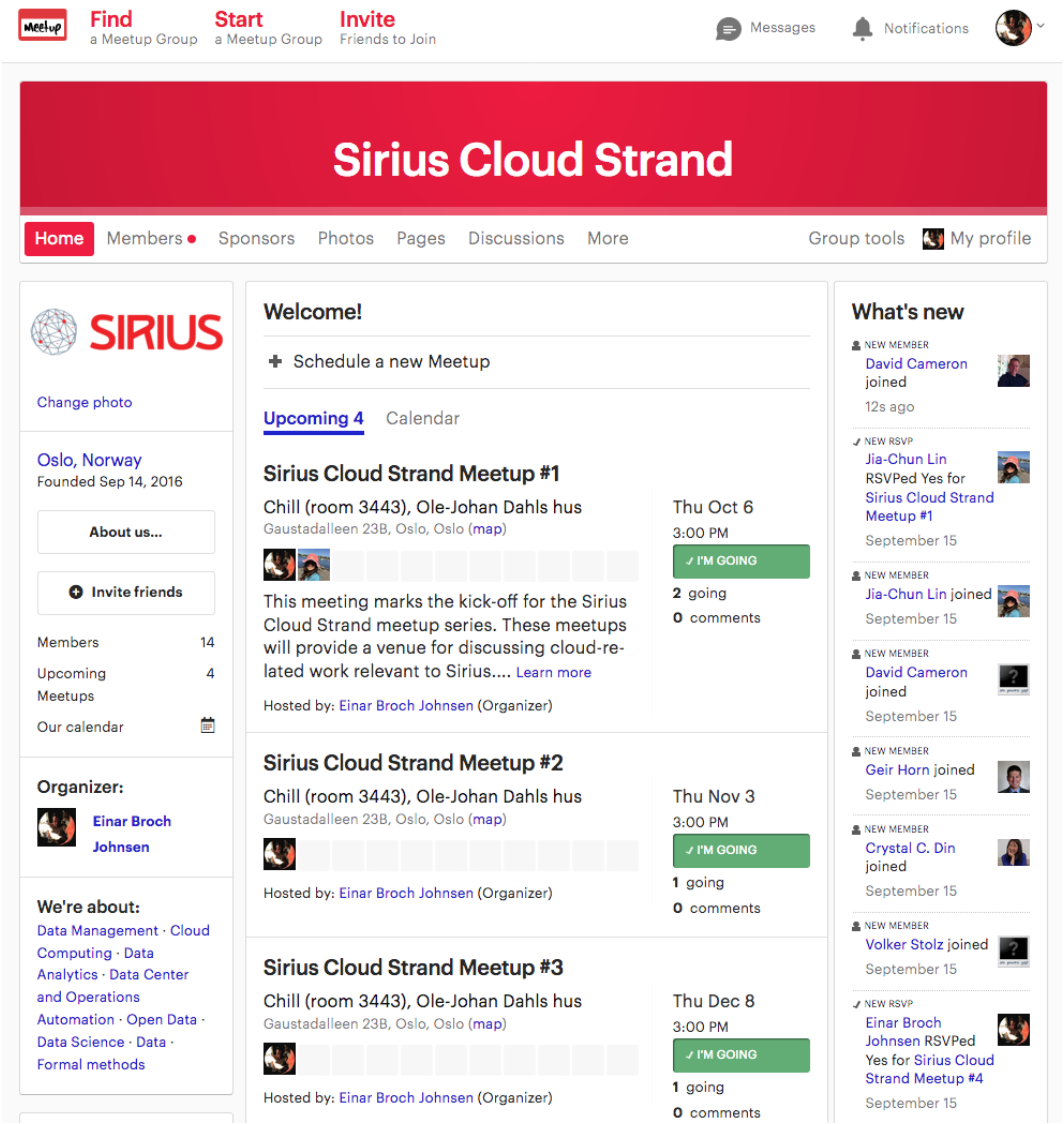
The slides from Einar Broch Johnsen's invited talk surveying aspects of Envisage (from IFMCloud 2016, the first international workshop on formal methods for and on the cloud) have been posted on Slideshare, available here: `link to slides`.



7.4 Sirius Cloud Strand Meetup Group

UIO has created a meetup group, the *Sirius Cloud Strand*, to focus on cloud computing and formal methods. Based on our experiences from participating in the Big Data meetups, we plan to host one event per month. Each event will consist of two talks, one academic talk and one industry talk highlighting a challenge or solution experienced in the industrial setting.

We hope that this group will become a fertile meeting ground for exchange between formal methods research and industry. The starting point for the academic presentations will be the outcomes of Envisage. The Sirius Center provides a budget for invited speakers; e.g., we are planning to invite Stijn de Gouw (FRH) to present the outcomes of Task T2.3 on SLA-metrics and monitoring for one of the meetings.



Appendix A

List of Dissemination Activities for Community Reach-Out

This list extracts dissemination activies from Chapter 5.3 of the Year 3 Periodic Progress Report.

Activity	Description	Comment
Newspaper article	Einar Broch Johnsen (UIO), *Lavtrykk i dataskyen*, Aftenposten, October 10, 2013	In Norwegian
Newspaper interview	Interview with Einar Broch Johnsen (UIO), Finansavisen, November 8, 2013	In Norwegian
Newspaper interview	Interview with Einar Broch Johnsen (UIO), Finansavisen, November 18, 2013	In Norwegian
Project presentation	Einar Broch Johnsen (UIO), Norwegian Broadcasting Company, Division for New Media, November 13, 2013	Industry dissemination
Concertation	Position paper contributed to the concertation meeting *Towards an interoperable European Ecosystem of Services*, 12-13 March 2014, hosted by the Software & Services, Cloud Computing, DG Connect	
Project presentation	Reiner Hähnle (TUD) presented ABS and Envisage at Deutsche Bahn AG, Frankfurt, Germany, April 2014	Industry dissemination
Project presentation	Reiner Hähnle (TUD) presented ABS and Envisage at Bosch Engineering, Abstatt, April 2014	Industry dissemination
Project presentation	Amund Tveit (ATB) presented Envisage at their stand at the Norwegian Medicloud seminar (`www.medicloud.no`).	Industry dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage for the Green Mountain Data Center (`http://greenmountain.no`, May 14, 2014.	Industry dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage for ConocoPhillips (`http://www.conocophillips.no`), May 19, 2014	Industry dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage for SuperOffice (`http://www.superoffice.no`, Sep. 2, 2014	Industry dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage for Visma (`http://www.visma.no`), Sep. 19, 2014.	Industry dissemination
TimSort presentation	Stijn de Gouw (FRH), Proving that Android's, Java's and Python's sorting algorithm is broken (and showing how to fix it), presentation at the University of Leiden's series "This Week's Discoveries", March 10, 2015	General public dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage for Uni Research Bergen, 26 February 2016	Industry dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage for IBM Norway, 18 February 2016	Industry dissemination
Project presentation	Rudi Schlatte (UIO) presented Envisage at CloudScape 2016, Brussels, Belgium, 8–9 March 2016	Industry dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage at Net Futures 2016, Brussels, Belgium, 20–21 April 2016	Industry dissemination
Project presentation	Einar Broch Johnsen (UIO) presented Envisage at the kick-off meeting of the Sirius Center, 19 May 2016	Industry dissemination
Scientific presentation	Rudi Schlatte (UIO) presented Envisage research at the Oslo Hadoop Big Data Meetup, 18 August 2016	Industry dissemination
Scientific presentation	Jacopo Mauro (UIO) presented Envisage research at the Oslo Hadoop Big Data Meetup, 18 August 2016	Industry dissemination
Scientific presentation	Kelly Lin (UIO) presented Envisage research at the Oslo Hadoop Big Data Meetup, 18 August 2016	Industry dissemination